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THE DUPLEX LIGHTING SYSTEM

as applied to

COMMERCIAL REQUIREMENTS

FRANKLIN INSTITUTE
PHILADELPHIA

DUPLEX LIGHTING WORKS
of **General Electric Company**

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6 West 48th Street, New York City

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THE purpose of this book is to provide assistance to those who, appreciating the value of good illumination, are desirous of securing information as to the means by which this may be obtained through the Duplex Lighting System.

Requirements of Good Illumination

Good lighting results from the fulfillment of the following requirements:

1. Light of suitable *quality*
2. Light from the proper *directions.*
3. Light of the correct *intensity.*

(1) **Quality** involves both color of light and diffusion of light, or absence of glare.

Color—Daylight constitutes the standard which should be approached in artificial illumination. While the exact proportions are not the same, all of the colors in daylight are contained in the light emitted by MAZDA C lamps, and objects retain their natural appearance when viewed under this light. Daylight MAZDA lamps have a special blue glass bulb giving a light which is a further step toward daylight color, and is extremely valuable in locations where closer color identification is needed or where, as frequently in offices, a mixture of daylight and artificial lighting is found. Daylight MAZDA lamps may be employed with excellent results in Duplexalites. (For processes where extreme accuracy of color matching is required, portable counter units with glass color screens which duplicate north sky light with exactness, should be employed.)

Glare—is brightness within the field of vision of such a character as to cause discomfort, annoyance, interference with vision, or eye-fatigue. Often, like smoke from a chimney, it represents a positive waste of energy.

The Duplexalite deflector and the specially designed, flat diffusing disc form a perfect eyeshield from the extreme brightness of the Mazda C lamp, while, at the same time, the outside of the deflector is illuminated sufficiently to avoid sharp contrast in brightness.

(2) **Direction** of light is largely responsible for good or bad lighting. In Duplex Lighting, the greater part of the light is indirect, and the light thus diffused from the ceiling results in a minimum of shadow. The direct light from the flat bottom disc is sufficient to produce just *enough* warm shadow to give objects true value and natural proportions.

(3) **Intensity**—It is impossible to fix *definite* standards of light intensity for various classes of work because of the widely differing conditions. However, the table on page 9 will be of considerable assistance as a guide to follow.

ID 91-B316 TCF

The Mazda C Lamp

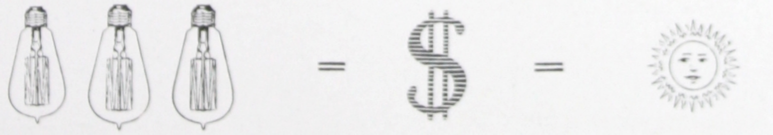
The Mazda C is the most efficient incandescent lamp known. The smallest size produces 11.53 units of light per watt of current consumed and the largest size, 19.33.

Obviously, therefore, it is an advantage to use *one* large Mazda C lamp per fixture instead of several smaller ones of the same total capacity.

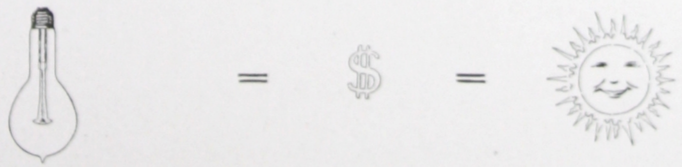
While the Mazda C lamp *produces* this light—it is but raw material, highly concentrated, and must be refined by proper fittings and directed to the working plane to become useful illumination.

Bare lamps or bright glass fittings are still to be found in the windows of some "popular" jewelry stores where they attract the eye and at the same time make it impossible for one to examine the merchandise too closely. Wherever high class merchandise is on display, all lights are concealed so that, while providing necessary illumination of goods, they do not compete in eye-attraction.

Some stores have well-lighted windows in this respect while *inside* the store where actual *sales* are made, we find the counters either inadequately lighted, through the false idea of current economy, thus failing to show the goods to best advantage—or bright, glaring lights offer a direct competition in eye-attraction.

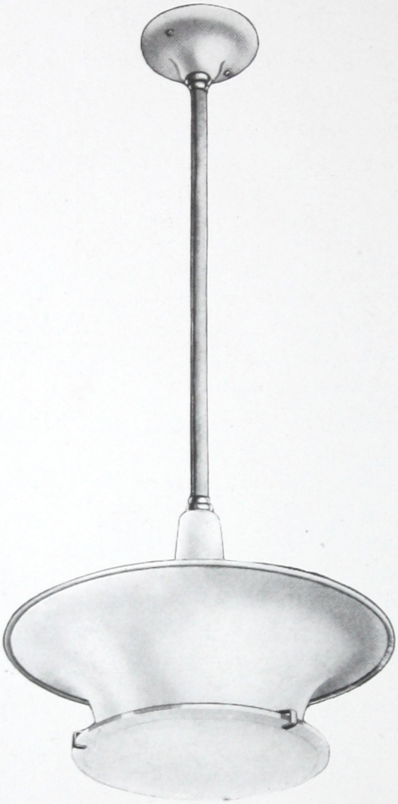


THREE 60-WATT MAZDA B LAMPS USE 180 WATTS AND GIVE 1726.2 LUMENS (UNITS OF LIGHT)



ONE 150-WATT MAZDA C LAMP USES 150 WATTS AND GIVES 2049 LUMENS (UNITS OF LIGHT)

ID 91-8315 TCF



Standard Duplexalite

The Standard Duplexalite is the basis of all forms of Duplexalites and is essential for the efficiency of Duplex Lighting. It consists of the necessary ceiling plate or canopy adapted to all standard ceiling outlets, a suspension of specially constructed silk-covered flexible cord with "Acorn" strain-relief grips at the top and bottom, characteristic socket cover, deflector and moulded, flat glass disc—all in the correctly focused position for the rated size of Mazda C lamp.

The deflector, socket cover and canopy are finished in the most durable matt-surfaced porcelain enamel of an ivory color. The interior reflecting surface is of polished white enamel.

MAZDA C LAMP DATA FOR DUPLEX LIGHTING

Size of Lamp in Watts	Clear Mazda C Lumens (110-volt)	Daylight Mazda Lumens (110-volt)	Type of Duplexalite Designed For Lamp	Socket	**Maximum Length Over All	**Maximum Ceiling to Top of Deflector	Diameter of Deflector
*75	865	600	D-131	Medium	36″	32″	12″
100	1260	875	D-131	Medium	36″	32″	12″
150	2040	1400	D-131	Medium	36″	32″	12″
200	3100	2000	D-231	Medium	48″	43″	14″
300	4840	3360	D-531	Mogul	60″	54″	16″
500	8750	5600	D-531	Mogul	60″	54″	16″
750	13900		D-1031	Mogul	72″	63″	20″
1000	19300		D-1031	Mogul	72″	63″	20″

*Use screw socket extension to properly focus this lamp.

**Flexible cord stem should be cut to proper length.

NOTE: Where it may be desired to lessen the intensity of the direct light, enamel bowled lamps are recommended for decreasing this factor and reducing the incident disc brightness.

Two Classes of Installations

In planning a commercial lighting installation one of the two following conditions is presented:

1. Where the building has not been wired previously, or where, if wired, the outlets may be rearranged to secure adequate illumination. Here the greatest freedom is allowed in planning the installation, which latitude permits thoroughly satisfactory lighting results.
2. Where no change or addition is to be made in existing outlets. In this case one has but to decide upon the proper sizes of Duplexalites and lamps to replace the present fixtures. The advantage to be gained by changing over is then dependent entirely upon the greater efficiency and diffusion of light furnished by the Duplexalites in comparison with less modern equipment.

(1) NEW BUILDINGS	(2) OLD BUILDINGS
(**a**) From Table I., page 9. find the class to which the lighting installation belongs.	(**a**) From Table I., page 9, find the class to which the lighting installation belongs.
(**b**) Measure the ceiling height and width of the room. With these figures, refer to Table II., page 10, and find the wattage per square foot and the number of rows of outlets desirable for this class of installation.	(**b**) Measure the ceiling height and width of the room. With these figures, refer to Table II., page 10, and find the wattage per square foot desirable for this class of installation.

NOTE: For rooms which are not square or nearly square the necessary watts per square foot to produce a given illumination may be taken as the average of the figures given in the table for rooms whose widths correspond to the two dimensions.

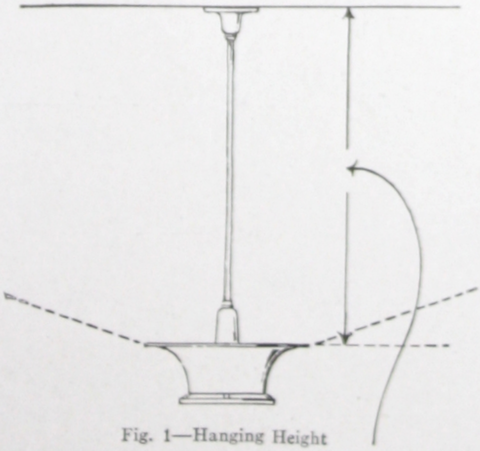


Fig. 1—Hanging Height

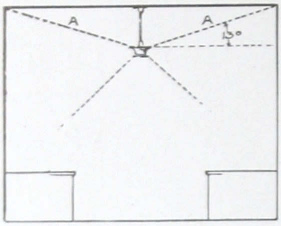


Fig. 2

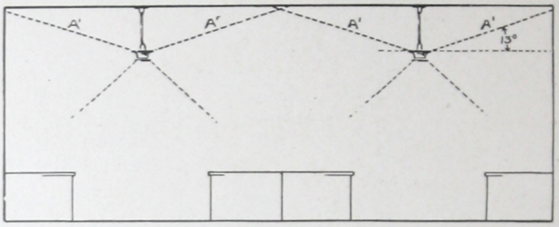


Fig. 3

(c) Refer to Table III., page 11, and find the permissible distance between outlets, and between outlets and sidewalls.	**(c)** (Already fixed.)
(d) Make a diagram to scale of the floor area to be lighted, and lay out the position of outlets, as per Tables II. and III.	**(d)** (Already fixed.)
(e) Divide the total floor area by the number of outlets to be used, and find the average number of square feet each Duplexalite must illuminate.	**(e)** Divide the total floor area by the number of outlets to be used, and find the average number of square feet each Duplexalite must illuminate.
(f) Multiplying this by the watts per square foot will give the size in watts of the lamps to be used. Should the resulting size be found to come between	**(f)** Multiplying this by the watts per square foot will give the size in watts of the lamps to be used. Should the resulting size be found to come between

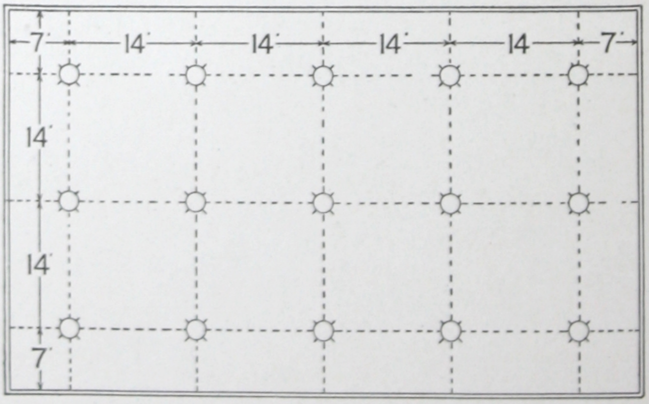


Fig. 4

Showing how lighting outlets should be laid out to provide a maximum degree of uniformity in light distribution. Here each lighting unit is given a definite area to illuminate, i. e., all the space falling within 7 feet from a point directly beneath the lighting unit. In actual practice, however, when all lights are in use, there is an over-lapping of illumination and thereby increased uniformity.

two standard lamp sizes, use the larger of the two. The table on page 4 gives the type of Duplexalite designed for this lamp.

(g) Refer to Table III., page 11, where proper hanging heights are shown for the distance between outlets.

two standard lamp sizes, use the larger of the two. The table on page 4 gives the type of Duplexalite designed for this lamp.

(g) Refer to Table III., page 11, where proper hanging heights are shown for the distance between outlets.

(NOTE—Figures 2 and 3 *diagram* the proper hanging height. The shadow line (A) is intended to strike the junction of ceiling and walls.)

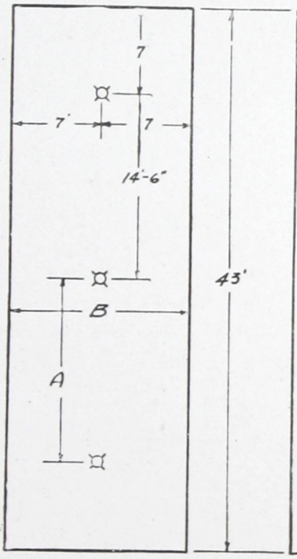


Fig. 5

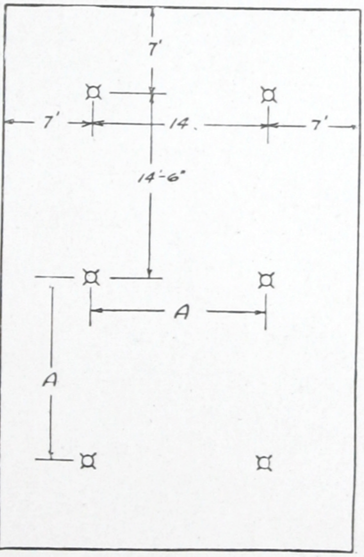


Fig. 6

To the left is shown the ground plan of a long narrow room, while to the right we have a room of the same length and height but of twice the width. It will be noted that in both cases each lighting unit is given an area to light of 7 feet radius. In long narrow rooms when one row of outlets is sufficient, the width of the room should be taken as the spacing figure if it is greater than the actual distance between the outlets. When there are two or more rows of outlets the ideal arrangement is that of squares though rectangles are satisfactory if the difference between the length and breadth of the rectangle in any given case is not too marked.

EXAMPLE

Problem—Design a Duplexalite installation for a select Haberdashery, the dimensions being 43′ x 14′, with a 13′ ceiling height, color of ceiling very light. Very good illumination is desired in this store.

(a) Table I, page 9, shows that a Haberdashery, to be very well lighted, requires 8 foot-candles.

(**b**) Watts per square foot values for a 12′ ceiling height most nearly apply.
A room 15′ wide requires 3.10 watts per square foot.
A room 50′ wide requires 1.70 watts per square foot.
Therefore, use $\frac{3.10 \times 1.70}{2} = 2.40$

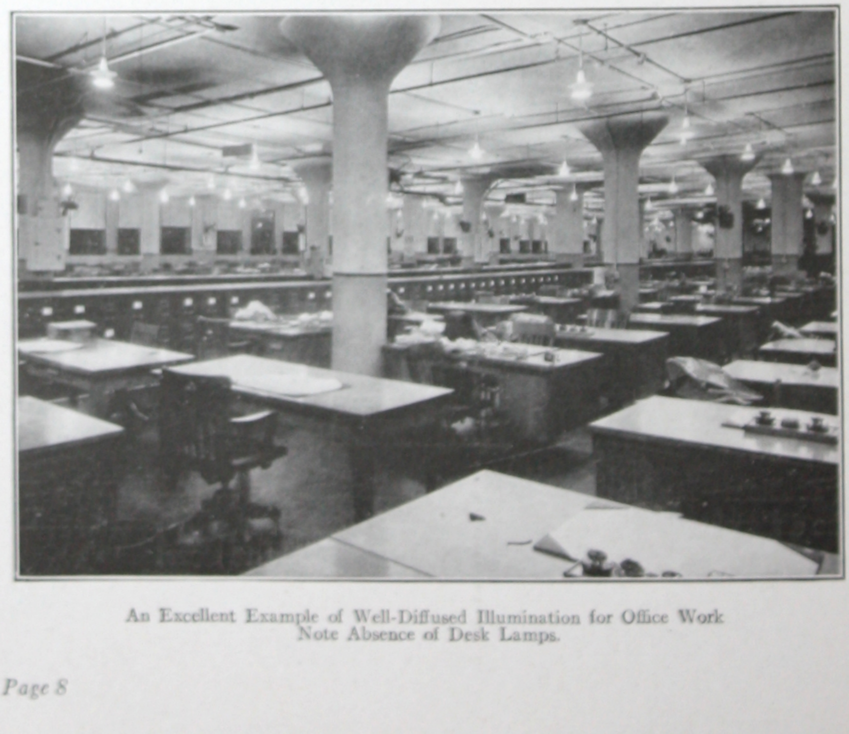
(**c**) The permissible distance between units is 15½′, and the permissible distance between outlets and walls is 8′. Therefore one row of outlets is sufficient, and 3 outlets are required lengthwise.

(**d**) A satisfactory location of outlets for this installation is shown in Fig. 5.

(**e**) Area = 14 × 43 = 602 sq. ft.
$\frac{602}{3} = 201$ sq. ft. to be illuminated by each unit.

(**f**) 201 × 2.40 = 482 watts, to be furnished by each lamp.
Therefore, three 500-watt lamps, equipped with Duplexalite D-531, should be used.

(**g**) Referring to Table III., the proper hanging height for these units would be 28″ from the ceiling to the top of the deflector



An Excellent Example of Well-Diffused Illumination for Office Work
Note Absence of Desk Lamps.

TABLE I

Types of Installations

STORES	Average Lighting *Class	Very Good Lighting *Class
Department Stores and Large Specialty Stores		
Main floors	6	10
Other floors	4	8
Stores of Medium Size		
Book and stationery	4	6
Clothing	4	8
Drug	4	8
Dry goods	4	8
Furniture	4	6
Grocery	4	6
Exclusive Small Stores		
Light goods	6	10
Dark goods	8	12
Small Stores in General		
Art	5	8
Bake shop	4	6
Book	4	6
China	4	6
Cigar	4	6
Clothing	4	8
Confectionery	4	6
Decorator	4	8
Drug	4	6
Dry goods	4	8
Florist	4	6
Furrier	5	8
Grocery	4	6
Haberdashery	5	8
Hardware	4	6
Hat	4	6
Jewelry	4	6
Leather	4	6
Meat	4	6
Millinery	4	8
Music	4	6
Notions	4	6
Piano	4	6
Shoe	4	6
Tailor	4	8
Tobacco	4	6
Offices, Banks and Miscellaneous		
Auditorium, church	2	4
Automobile showroom	4	6
Bank (*See also Office*)	4	8
Barber shop	5	8
Dance hall	2	4
Depot—waiting room	1	4
Drafting room	10	12
Hotel		
Lobby	2	4
Dining room	2	4
Library reading room	3	6
Lunch room	2	5
Office	6	10
Restaurant	2	4
School, class and study rooms	4	8

*Note—The figures under the headings "Class" are foot-candle intensities.

Illuminating Engineers and Architects will find an explanation of the construction of Table II on page 19.

TABLE II.

ROOM WITH 10-FOOT CEILING HEIGHT

*Class (Intensity of Illumination)	ROOM WIDTH,† 10 FEET.		ROOM WIDTH,† 15 FEET.	
	White or Very Light Ceiling	Fairly Light Ceiling	White or Very Light Ceiling	Fairly Light Ceiling
	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.
1	.47	.57	.38	.47
2	.94	1.15	.76	.94
3	1.40	1.60	1.15	1.40
4	1.75	2.10	1.50	1.85
5	2.15	2.50	1.90	2.35
6	2.30	2.80	2.30	2.80
8	3.05	3.55	2.80	3.45
10	3.65	4.45	3.50	3.80
12	4.40	5.35	3.70	4.55
Units Required	1 Row of Duplexalites.		2 Rows of Duplexalites.	

*Class (Intensity of Illumination)	ROOM WIDTH,† 25 FEET		ROOM WIDTH,† 50 FEET	
	White or Very Light Ceiling	Fairly Light Ceiling	White or Very Light Ceiling	Fairly Light Ceiling
	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.
1	.31	.38	.26	.31
2	.62	.76	.52	.62
3	.92	1.15	.77	.93
4	1.25	1.50	1.00	1.25
5	1.55	1.90	1.30	1.55
6	1.85	2.10	1.55	1.70
8	2.45	2.75	1.90	2.05
10	2.80	3.05	2.05	2.55
12	3.40	3.65	2.50	3.05
Units Required	3 Rows of Duplexalites.		5 Rows of Duplexalites.	

ROOM WITH 12-FOOT CEILING HEIGHT

*Class (Intensity of Illumination)	ROOM WIDTH,† 10 FEET.		ROOM WIDTH,† 15 FEET.	
	White or Very Light Ceiling	Fairly Light Ceiling	White or Very Light Ceiling	Fairly Light Ceiling
	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.
1	.55	.65	.42	.51
2	1.10	1.30	.84	1.00
3	1.50	1.80	1.25	1.55
4	2.05	2.10	1.70	2.05
5	2.25	2.65	2.10	2.55
6	2.70	3.05	2.50	2.85
8	3.45	4.10	3.10	3.75
10	4.30	5.10	3.85	4.15
12	5.15	5.65	4.10	5.00
Units Required	1 Row of Duplexalites		2 Rows of Duplexalites	

*Class (Intensity of Illumination)	ROOM WIDTH,† 25 FEET		ROOM WIDTH,† 50 FEET	
	White or Very Light Ceiling	Fairly Light Ceiling	White or Very Light Ceiling	Fairly Light Ceiling
	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.
1	.34	.42	.26	.33
2	.68	.83	.53	.65
3	1.00	1.15	.79	.98
4	1.25	1.35	.97	1.20
5	1.40	1.70	1.20	1.30
6	1.65	1.95	1.30	1.60
8	2.10	2.60	1.70	2.05
10	2.65	3.25	2.05	2.55
12	3.20	3.60	2.50	3.05
Units Required	2 Rows of Duplexalites.		4 Rows of Duplexalites.	

*"Class" represents foot-candles.

† See note on page 5.

(Note For Daylight Mazda lamps, add 50% to wattage for same foot-candle intensity.)

TABLE II.—Continued

ROOM WITH 15-FOOT CEILING HEIGHT

*Class (Intensity of Illumination)	ROOM WIDTH,† 10 FEET.		ROOM WIDTH,† 15 FEET.	
	White or Very Light Ceiling	Fairly Light Ceiling	White or Very Light Ceiling	Fairly Light Ceiling
	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.
1	**.71**	**.83**	**.51**	**.63**
2	**1.40**	**1.50**	**.93**	**1.15**
3	**1.95**	**2.00**	**1.25**	**1.45**
4	**2.30**	**2.70**	**1.60**	**1.95**
5	**2.90**	**3.25**	**1.95**	**2.25**
6	**3.30**	**3.90**	**2.35**	**2.70**
8	**4.40**	**5.20**	**2.90**	**3.60**
10	**5.10**	**5.95**	**3.65**	**4.50**
12	**6.15**	**7.15**	**4.35**	**5.40**
Units Required	**1 Row of Duplexalites.**		**1 Row of Duplexalites.**	

*Class (Intensity of Illumination)	ROOM WIDTH,† 25 FEET		ROOM WIDTH,† 50 FEET	
	White or Very Light Ceiling	Fairly Light Ceiling	White or Very Light Ceiling	Fairly Light Ceiling
	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.
1	**.38**	**.47**	**.28**	**.36**
2	**.76**	**.93**	**.57**	**.66**
3	**1.05**	**1.30**	**.79**	**.87**
4	**1.40**	**1.50**	**.92**	**1.10**
5	**1.55**	**1.90**	**1.10**	**1.40**
6	**1.85**	**2.20**	**1.35**	**1.65**
8	**2.40**	**2.90**	**1.65**	**2.05**
10	**2.95**	**3.35**	**2.05**	**2.55**
12	**3.30**	**4.05**	**2.45**	**3.10**
Units Required	**2 Rows of Duplexalites.**		**3 Rows of Duplexalites.**	

ROOM WITH 20-FOOT CEILING HEIGHT

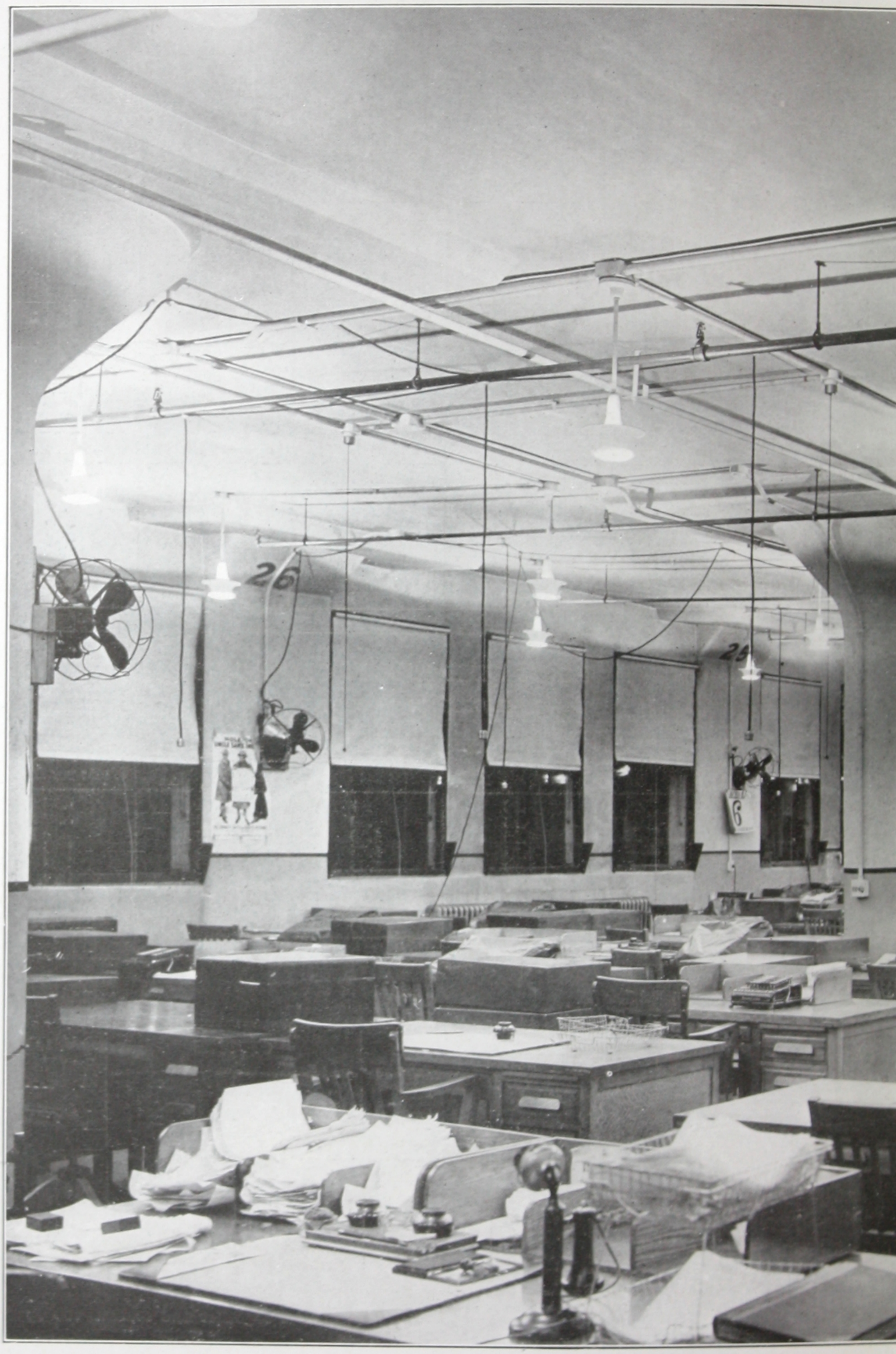
*Class (Intensity of Illumination)	ROOM WIDTH,† 25 FEET		ROOM WIDTH,† 50 FEET	
	White or Very Light Ceiling	Fairly Light Ceiling	White or Very Light Ceiling	Fairly Light Ceiling
	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.	Watts per Sq. Ft.
1	**.38**	**.47**	**.31**	**.32**
2	**.73**	**.80**	**.52**	**.57**
3	**1.00**	**1.20**	**.72**	**.86**
4	**1.35**	**1.55**	**.96**	**1.15**
5	**1.70**	**1.95**	**1.20**	**1.45**
6	**2.05**	**2.35**	**1.45**	**1.70**
8	**2.70**	**3.15**	**1.90**	**2.30**
10	**3.40**	**3.90**	**2.40**	**2.85**
12	**4.10**	**4.70**	**2.90**	**3.45**
Units Required	**1 Row of Duplexalites.**		**2 Rows of Duplexalites.**	

TABLE III.

Ceiling Height	STORES		OFFICES		Best Hanging Height, Ceiling to Top of Deflector
	Permissible Distance Between Outlets	Permissible Distance Between Outlets and Sidewalls	Permissible Distance Between Outlets	Permissible Distance Between Outlets and Sidewalls	
9 Feet	9½	5	9½	4	18″
10 "	11	5½	11	4½	20″
11 "	12½	6½	12½	5	22″
12 "	14	7	14	5½	25″
13 "	15½	8	15½	6½	28″
15 "	18½	9½	18½	7½	32″
18 "	23	11½	23	9	43″
20 "	26	13	26	10½	54″

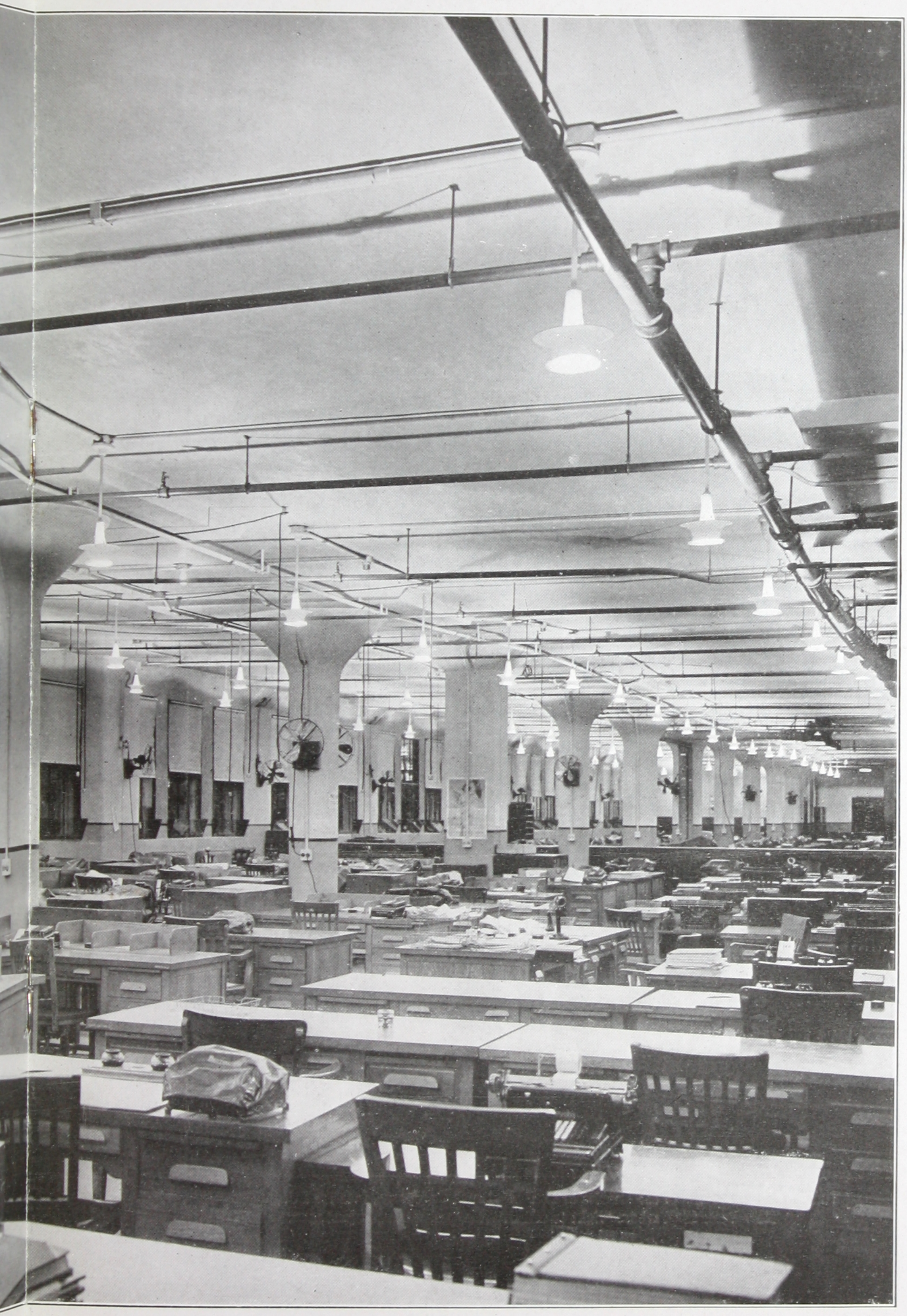
The spacing figures given under Offices represent the extreme distances allowable. In general, it is better to space lamps about a foot closer together and to have the outside row of units come somewhat nearer the walls.

† See note on page 5.



NIGHT PHOTOGRAPH BY DUPLEXALITE

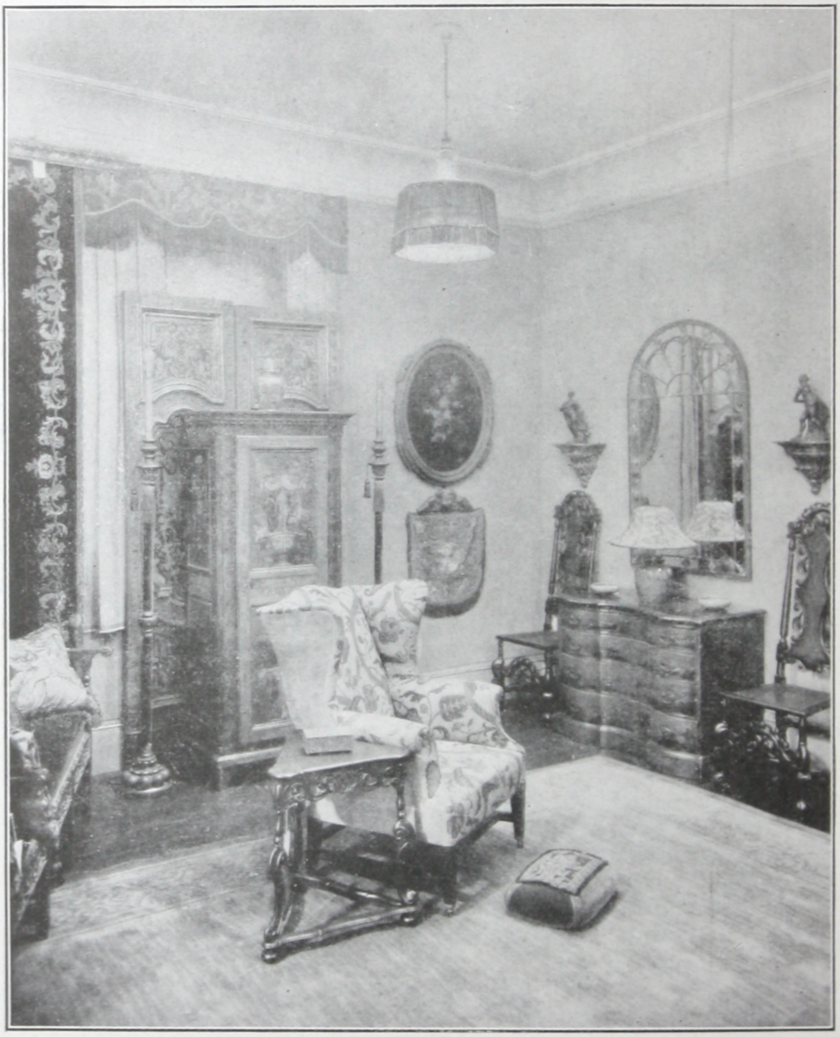
1024 Dupiexalites are used in the offices of the Un



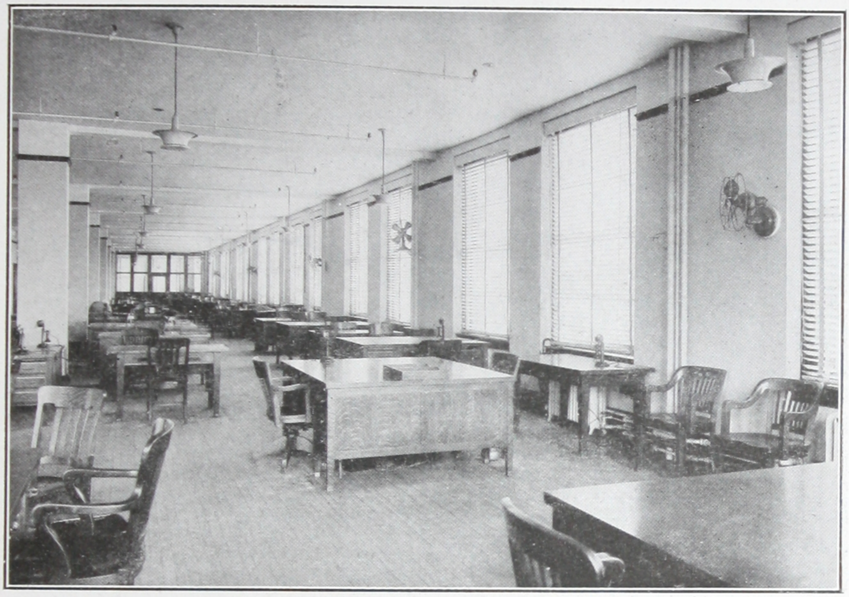
ALITE, U. S. N. SUPPLY BASE, BROOKLYN, N. Y.

United States Naval Supply Base, Brooklyn, New York.

An Example of Desirable Illumination Where Fine Furniture and Exquisite Fabrics Are Displayed.

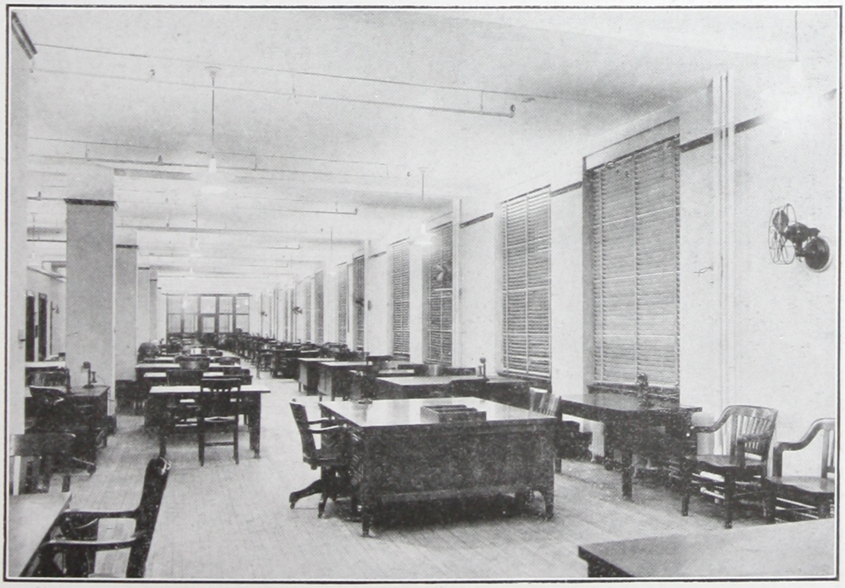


This is a corner of one of the studios of H. F. Huber & Company, Interior Decorators New York City, where "light to sell by" is of paramount importance.



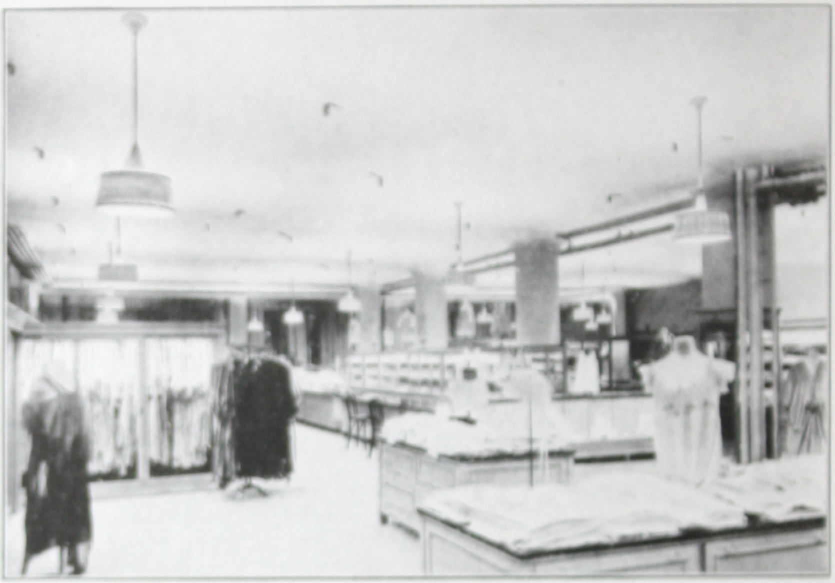
DAY VIEW

One section of the New York Offices of the Otis Elevator Company. Daylight controlled and diffused by Diffuselite Blinds and Special Wall and Ceiling Coatings



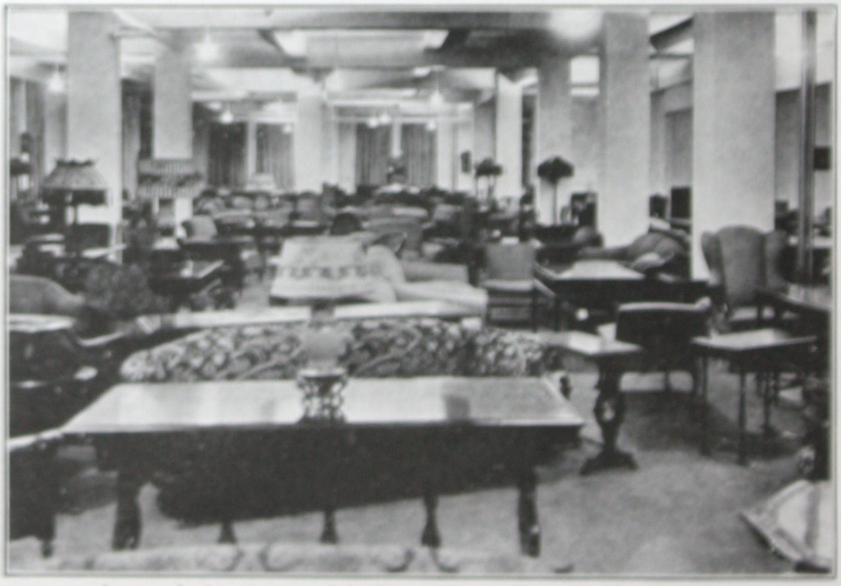
NIGHT VIEW

Photograph of the same room as above, illuminated by the Duplex Lighting System.



Lingerie Department, Best & Company, New York City.

Fabric shades may be used on the Duplexalite where desirable to harmonize with decorative schemes or for particular requirements. The quality of the illumination is practically unchanged.

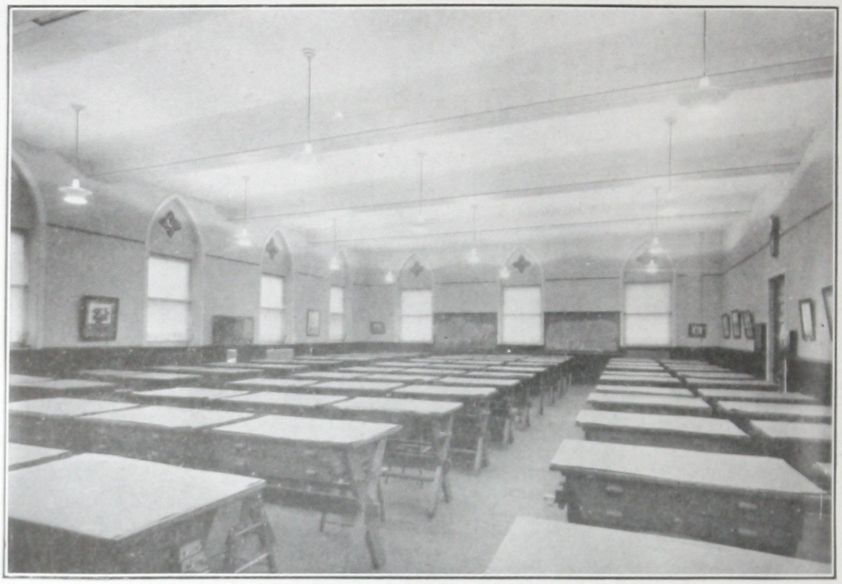


A corner in the salesroom of the Thonet-Wanner Company, New York City.

An example of the very desirable results obtained by the Duplex Lighting System in spite of a heavily beamed ceiling. Ideal lighting for furniture salesrooms.

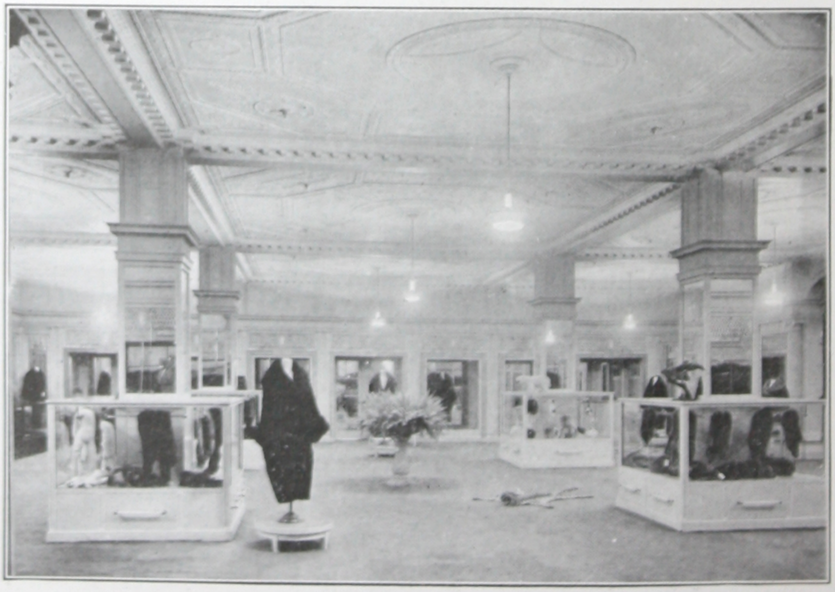
The drafting room above was photographed at night by Duplex Lighting only. This is an example of many installations of Duplexalites in offices and other locations where the value of perfect illumination is appreciated.

Salesroom of the Studebaker Automobile Corp. of New York.



The Duplexalite offers ideal illumination for schools and other places where good light without glare is required.

Above is one of the class rooms of the Stevens Institute of Technology, Hoboken, N. J.



Fur Department of Lord & Taylor, New York City.
Where Duplexalites are used with ornamental rings, antique gold finish.

Part of Publication Office, New York Sun
The same system of lighting is proving successful in the Hand and Machine Composing Rooms of the Sun

Explanation of Table II.

In large rooms, where there are many units, the overlapping of light augments the illumination on the working plane, increasing the utilization factor. Under favorable conditions, this may become as high as 45%. The highest coefficient of utilization used in Table II, however, is 41%.

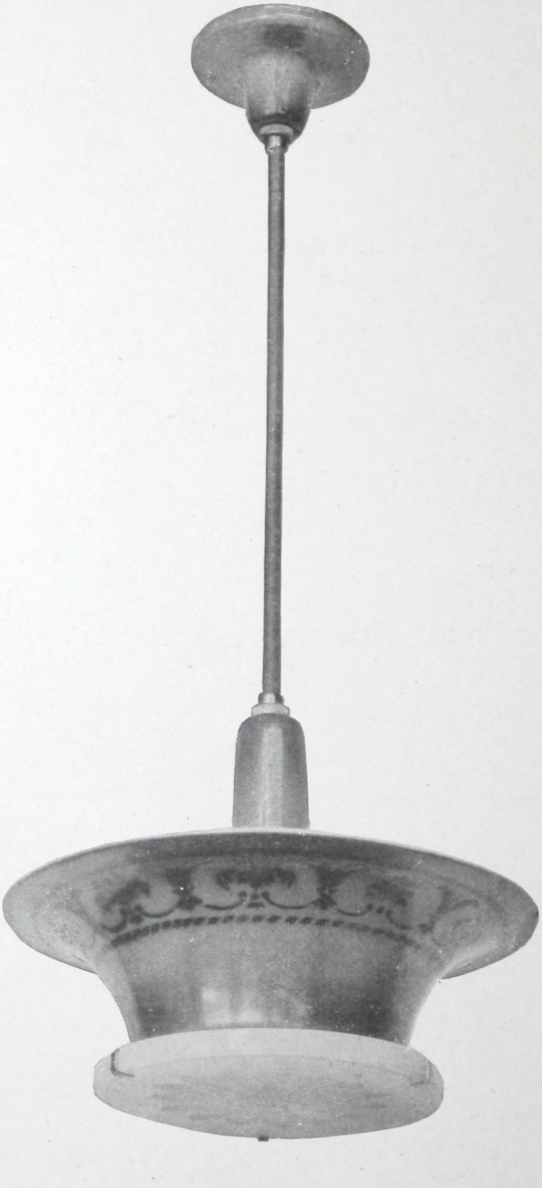
Ceilings: The ceiling colors indicated by "White or Very Light" and "Fairly Light," in the table are shown on the color samples on the inside of the back cover.

Side Walls: The color of the side walls used as a basis for the tables is *about* the color of the cover of this book.

(When lighter ceilings and walls are used, the foot-candle intensity will be correspondingly higher than that shown in the tables; or correspondingly less wattage may be used for the same foot-candle intensity.)

Depreciation: In every case the watts per square foot required to produce a given foot-candle intensity *have been increased* 30% to allow for depreciation due to general neglect of maintenance. This is necessarily a wide allowance, but experience with all forms of lighting equipment has shown that in a great many instances almost no care is given the equipment, and ceilings and walls are neglected, after installation. It must be appreciated, therefore, that the illumination at time of installation will in all cases be proportionately higher than that shown in the table. And if occasional care is given the equipment—as is given the cleaning of windows—this initial higher efficiency will remain approximately constant.

Etruscan Duplexalite

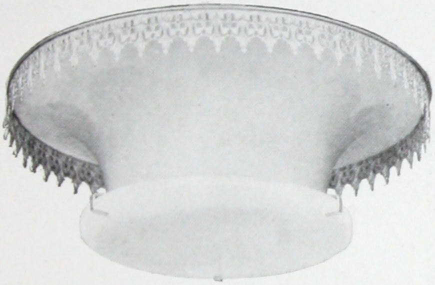


The Etruscan Duplexalite is designed to meet those requirements where a neat, though rich, ornamental fixture is appropriate.

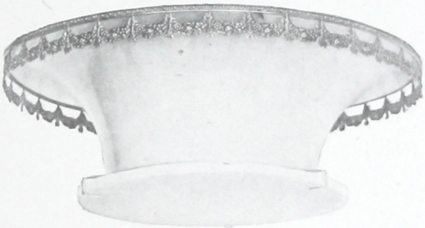
Dull glazed porcelain enamel in shaded golden brown with decoration fused into the surface in darker tone.

Ornamented Duplexalites

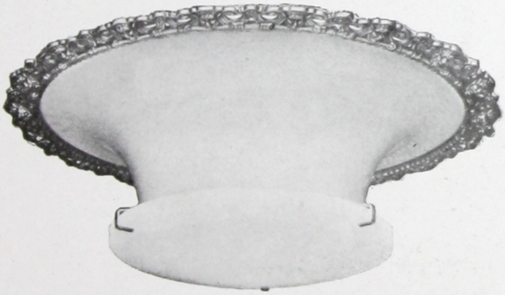
Following are illustrated ornamental rings for Duplexalites. The standard finish is antique gold. They are simply and securely attached to the Duplexalite deflector and add a rich dignity to the appearance. They are so designed that they can be slipped on and locked into position at any time.



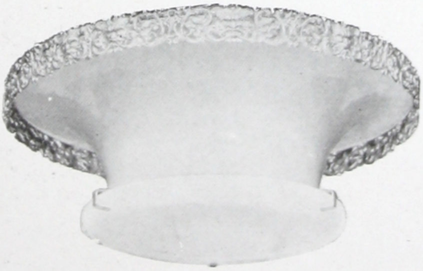
R-9032 (pressed)



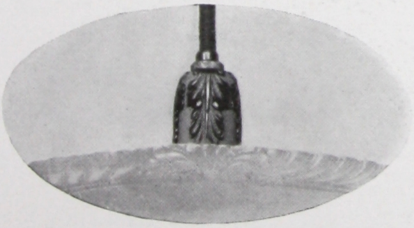
R-9100 (pressed)



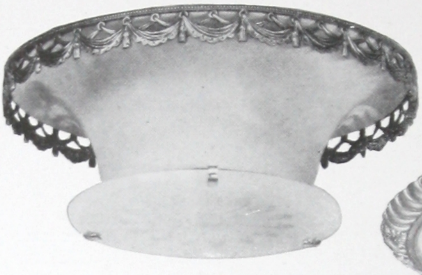
R-802 (cast)



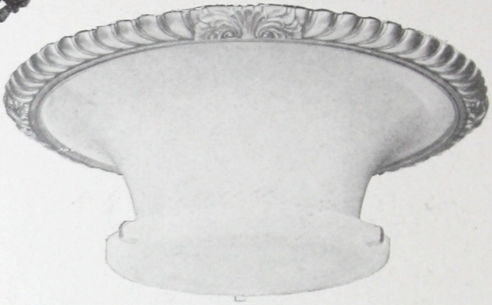
R-9036 (pressed)



Socket Husk No. **60**

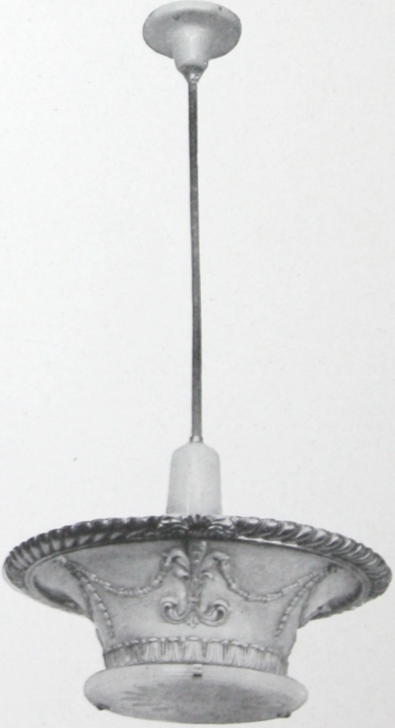


R-803 (cast)



R-800 (cast)

Duplexalite With Specially Ornamented Deflector and With Ornamental Ring R-800.



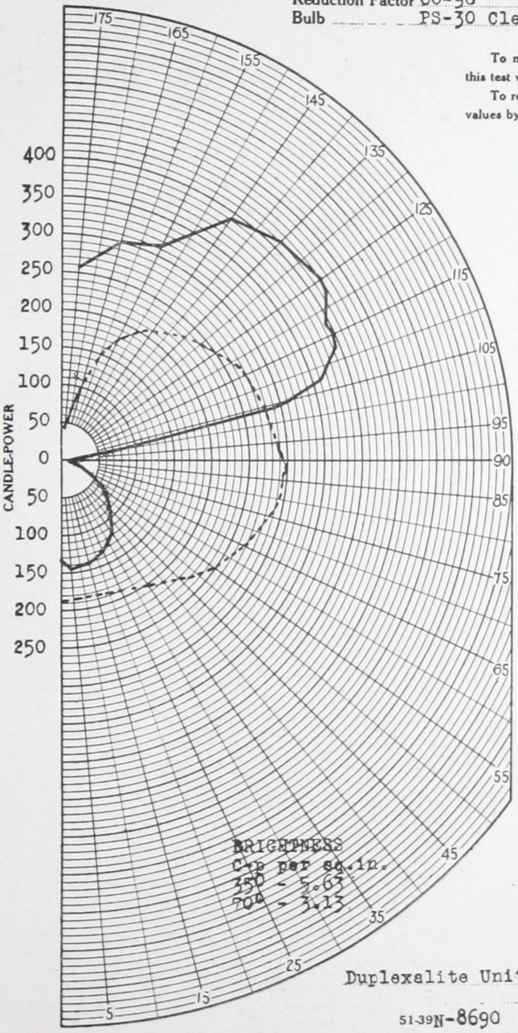
Duplexalites of special designs can be supplied to meet particular requirements—or Architects' designs will be followed—wherever the quantity is sufficient to warrant.

ACCESSORY Duplexalite Unit D-231 (Porcelain Enamel Reflector).

Regular Holder Position.
See Tests N-8691-92.

LAMP MAZDA C
Lab. Std. No. 200-C-30
Watts 200
Volts 110
Amperes
Lumens Clear 3100
Reduction Factor 80-90
Bulb PS-30 Clear

PHOTOMETER #3
Rotating Unit
Test Distance 10 ft.
Tested By JHW-DSM
Checked By ELE
Approved By
Date 1-12-20



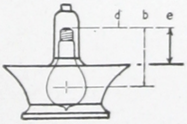
BRIGHTNESS
C-p per sq.in.
35° - 5.63
70° - 3.13

To maintain uniformity in recording data the lamp used in this test was operated at an efficiency of .... lumens per watt.
To reduce to .... l. w. p. multiply candle-power and lumen values by ....

Angle	Candle-Power	Zone	Lumens
0	133		
5	147	0- 10	14
15	141	0- 20	54
25	134	0- 30	116
35	119	0- 40	191
45	94	0- 50	264
55	71	0- 60	328
65	47	0- 70	375
75	27	0- 80	404
85	19	0- 90	425
90	9		
95	21	0-100	450
105	310	0-110	737
115	399	0-120	1128
125	420	0-130	1503
135	411	0-140	1821
145	393	0-150	2068
155	316	0-160	2214
165	302	0-170	2300
175	259	0-180	2325

Zone	Lumens	% Total Clear Lamp	Mean C.P.
0- 60	328	10.6	104
0- 90	425	13.7	68
90-180	1900	61.3	303
120-180	1197	38.6	381
0-180	2325	75.0	185

b 6" f
d g
e 4-1/2" dia. 14"

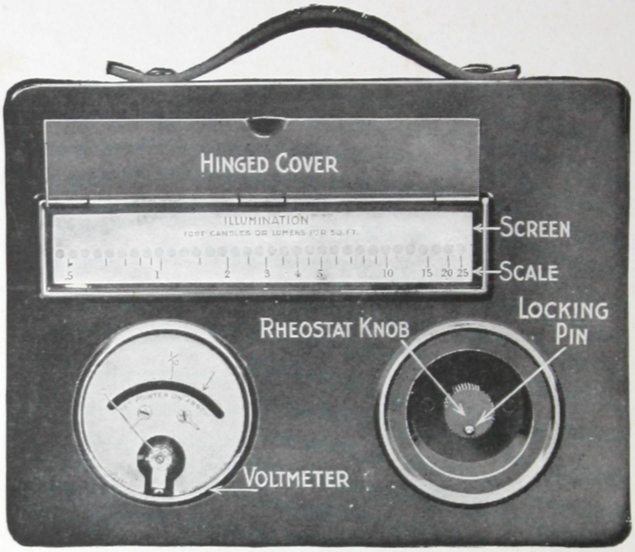


Duplexalite Unit D-231

51-39N-8690

NOTE: Where it may be desirable to lessen the intensity of the direct light and to increase the indirect component proportionately, the use of enamel bowled lamps is recommended.

The Foot-Candle Meter



Foot-Candle Meter

The foot-candle is the unit of illumination intensity. Direct measurements of foot-candle intensities may be made with the Foot-Candle Meter.

The Foot-Candle Meter is a light portable instrument with which one may determine the degree of intensity of illumination at any point. It is simple in construction and is not easily damaged. Readings are made direct in foot-candles, so that no mathematical calculations are needed to make them significant.

The foot-candle intensities as indicated by the meter for any room or bay may be checked against the foot-candle intensities or class as given in the Classification Tables on page 9. These show the illumination intensity which experience has proven to be needed for various classes of installations.

Thus through the Foot-Candle Meter you have a direct test or means of knowing whether the lighting of an "Office or Store" is or is not adequate.

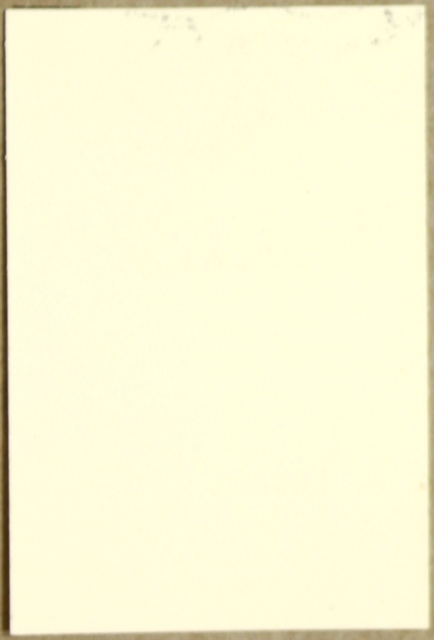
The Foot-Candle Meter further enables you to know definitely whether the illumination is uniform. If light in a room is not evenly distributed, the indications of the Meter at different points about the room will show this condition of uneven light distribution.

The foot-candle meter with leather carrying case may be obtained on order from the Duplex Lighting Works, or from any of the Mazda Lamp Divisions. The net price for each meter in case is $25.00, payable in advance.

Foot-Candle Meter and Leather Carrying Case

THE tables used in this book are based on the results obtained in rooms, the CEILINGS of which were painted per samples below:

WHITE OR VERY LIGHT CEILING



FAIRLY LIGHT CEILING

And the WALLS of which were approximately the color of the cover of this book.

Form D P 63